

Investigation of ERP Implementation on Organisations Functional & Operational Performance Areas

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Abstract— Enterprise Resource Planning (ERP) systems have transformed the way organizations go about the process of providing Information systems. Enterprise Resource Planning (ERP) systems encompasses modules supporting functional areas such as planning, manufacturing, sales, marketing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, transportation and e-business. The architecture of the software facilitates transparent integration of modules, providing flow of information between all functions within the enterprise in a consistently visible manner. Many organizations across the world have been adopted ERP implementation and had become a key business driver in today's world, but many well reputed companies had not implemented ERP yet since there are not well known about the success factors in the implementation of ERP. This paper is a case study to evaluate implementation of ERP in organisational functional and performance area & find out the effects of the various factors on the ERP implementation.

Key words: Enterprise Resource Planning Systems, Communication Effectiveness

I. INTRODUCTION

ERP (Enterprise Resource Planning) are integrated sets of software developed to share data across the organization for reducing redundant business processes. These systems are deployed in an organization to streamline the its functions Modern ERP solutions are developed by combining the best industry practices and processes and are delivered by the ERP vendors SAP, Oracle, Microsoft Dynamics and Baan, they are COTS (Commercial off-the-shelf) solutions .These are the shelf solutions deployed by organizations according to their needs. ERP systems saw a large boost in sales in the 1990s as companies faced the Y2K problem in their legacy systems. Many companies took this opportunity to replace their legacy information systems with ERP systems.

It takes months to implement ERP system and years to get required benefits from the system. However these benefits are not easy to claim as organizations face numerous problems during and after the implementation of the system. Research has been done for ERP implementations in numerous environments.

In summary, ERP systems differ from traditional in-house or custom development systems in three ways:

- the user may have to make changes to business processes and procedures;
- the user may need to introduce customizations; and
- the user becomes dependent on the ERP vendor for assistance and updates

II. LITERATURE REVIEW

A. Earliest Recognized Works

The exploration of the impact of IT investments on organizational performance has progressed ever since the 1980s. Some results show a significant contribution of IT to productivity, and business performance, whereas others fail to show any positive impact

At the outset, studies showed negative correlation between IT investments and productivity. These results were summed up by Robert Solow, who stated “we see computers everywhere except in the productivity statistics”. This so-called “productivity paradox” seemed to be the conclusion of the 1980's and early 1990's studies in the area

B. Recognized Works Year (1990-2000)

ERP solutions evolved from applications focused on materials requirements and resource planning and computer integrated manufacturing. The Enterprise Resource Planning term came about when software developers were searching for a name that would more aptly describe these broader systems (Gartner group, 1990). These new solutions provided functionality that encompassed other applications in addition to manufacturing. In the year 1990, the Garter Group employed the acronym ERP, as an extension of materials requirements planning, which later changed to manufacturing resource planning and computer integrated manufacturing. ERP came to represent a larger whole, reflecting the evolution of application integration beyond manufacturing.

Davenport (1998) notes that “ERP is not a project; it is a way of life. ERP system does not change anything, however the organization has to change the way of working”. ERP system implementation is a very complicated process as it can take long time with a lot of planning and consultation

Bryn-jolfsson (1993) suggests four explanations for these early findings: the error in measurement of in-puts and outputs, time lags, redistribution and dissipation of profits, and mismanagement of information technology. He goes on to recommend a change in the traditional measurements of productivity.

Brynjolfsson et al. (1994) extend the analysis to the organizational changes that are correlated with IT investments. Their results point to the decrease of the average size of the firm as the most important organizational change. Additionally, the findings indicate that this occurs especially after the first three years of the IT investment

Hitt and Brynjolfsson's (1996) study is one of the first studies that reveal a positive net return to IT investment by finding a gross marginal product of IT on productivity of approximately 95%.Brynjolfsson and Hitt (1996) analyse different econometric models previously employed in research. Using a larger and more re-cent database, they

reveal a significant positive impact of information systems on firm productivity.

The nebulous results led researchers to broaden their outlook on the relationship between IT and business performance. Brynjolfsson et al (2000) and Stratopoulos and Dehning (2000) agreed that the key aspect of the relationship IT investment-business value does not consist in how much the organization invests in IT, but in how the company is capable of managing the IT asset and the organizational changes that accompany the IT investment.

Continuing the research path started in 1994 about the organizational transformations engendered by IT investments, Brynjolfsson et al. (2000) indicated that there is a correlation between IT investments and the changes in the organizational context engendered by these investments that positively contributes to productivity growth and market value.

By the late 1990's, the research concerning the IT impact on financial performance broadened with a new research path that focused on the business value of Enterprise Resource Planning (ERP) systems. Once adopted within and across organizations, ERP systems achieve the integration of such business functions as accounting, sales and marketing, operations and logistics, and human resources. ERP systems are built on a single database that enables modules to share data, thus speeding up the information flow within organisation's.

C. Recognized Works Years (2001-2010)

Poston and Grabski (2001) examined the impact of ERP systems implementation on firm financial performance during an analysis window of 3 years before and 3 years after implementation. They found no significant improvements in the financial ratios. However, the firms obtained a significant decrease of the Cost of Goods Sold as a percent-age of revenue, in the third year after implementation.

On the one hand, the empirical studies show little financial gains associated with ERP implementations. On the other hand, the market and the managers perceive value in ERP announcements, and ERP implementations, respectively. (Mabert et al., 2001, Hayes et al., 2001, Hunton et al., 2002). Based on the findings of Mabert et al. there is clear indication that under budget firms make a stronger effort for ERP implementation

According to Hossein (2004), Enterprise resource planning (ERP) systems integrate internal and external management information across an entire organization, embracing finance/accounting, manufacturing, sales and service, customer relationship management, etc. ERP systems automate this activity with an integrated software application

Vatcharaporn et al.'s (2004) case study, a survey was conducted to learn from ERP users about their collective experience of implementing connected ERP systems. The survey was based on detailed interviews with ERP user companies across government and business sectors. The survey found that the need to integrate process and information was one of the main driving factors. The study concluded that when evaluating ERP systems, most user company's integration methodologies did include criteria to

incorporate data and application integration oriented approaches

In the recent years, ERP software have become widely used in almost all sectors such as production, services, finance, transportation and public utilities (Genoulaz & Millet, 2006). To give a few examples, Berchet and Habchi (2005) used an ERP system to arrange the supply chain activities of the telecommunications company Alcatel; Olson (2007) compared alternative ERP options and procurement of ERP systems as package programs and made a list of the advantages and disadvantages of both methods.

Evidence from a survey on companies who have adopted ERP systems and their impact on management practice confirms a number of such benefits. The most highly-rated perceived benefits involve increased flexibility in information generation, improved quality of reports, increased integration of accounts applications and improved decisions based on timely and reliable accounting information. Evidence suggests that businesses expect ERP systems to deliver improved company performance (Charlambos Spathias et al, 2005)

Enterprise resource planning (ERP) is the generic term used for management software that include modules such as production, finance, marketing and human resources and that allow companies to plan their goods and services (Stevenson, 2007) Chou and Chang (2008) examined the effects of ERP applications on performance increase; Vandai (2008) studied the critical success factors in ERP application; Chang (2008) analysed the performance effects of ERP on supply chain; Bose et. al. (2008) conducted a study on application of ERP systems in the supply chain management and inventory management of a company in the Chinese production sector

For many organizations, ERP systems are the way to do business but some want to turn ERP systems into their competitive advantage. Recently researchers have begun to understand the connection between enterprise systems and competitive advantage which is the focus of the study done by Fossier et al., 2008. Many companies have implemented ERP systems without worrying about the competitive advantage. For them, ERP system is the necessity to do business and they are afraid that without it they will lose their reputation and might face pressure from customers (Fossier et al., 2008).

According to the research that was done by Michael Burns (2009), ERP enables companies to break down traditional organizations silos, replacing them with a tightly integrated horizontal structure in which strategy, organizational structure, process and technology are closely aligned.

According to Loundon (2009), ERP is a packaged business software system that lets an organisation automate and integrate the majority of its business processes, share common data and practices across the enterprise and produce and access information in a real-time environment. A wide variety of business activities that includes sales, marketing, billing, production, inventory management, human resource management, and quality control depend on these systems.

By definition, a legacy system is a reference to an outdated computer or software systems that are not upgradeable to the latest versions. But it does not mean that

the legacy systems are defined by age instead they are defined by the lack of the original manufacturer support incapable of meeting latest organizational requirements (Janssen, 2010).

According to Ibrahim (2010) ERP is implemented in stages “It is thus argued that the stages of ERP implementation can be characterized as a journey with six stages”. Post implementation is the last stage of ERP project and it starts after Go-live date of ERP implementation project. ERP system implementation is a highly complicated task and broad in scope for many larger organizations and it could be tremendously complex. It takes months to implement ERP system and years to get required benefits from the system. However these benefits are not easy to claim as organizations face numerous problems during and after the implementation of the system.

D. Recognized Works Years (2010-2017)

In general, large companies start to consider an enterprise resource planning system when their legacy systems start to impede their financial performance resulting in losing their competitive edge; however, due to large capital commitments not every company has the financial or technical will or resources to replace all of their disparate legacy systems (Turban, et al., 2013, p. 305).

Christiaan Bach and Khalid Almgren (2014) convey the idea that Companies are looking for an information

system that can handle massive workloads. This is where Enterprise Resource Planning (ERP) systems come into play. An ERP integrates different subsystems into one huge system that shares one database. It enhances productivity and brings more profit to companies.

Russell (2015) visually describes many aspects of Enterprise Resource Planning (ERP) software which is indeed a suite of integrated business applications. ERP business applications enable an organization to cohesively manage automated backbone functions across major departments including HR, Sales, finance, marketing, and operations. Because ERP business application is primarily designed for large organizations, it is designated as an enterprise system (Beal, 2015).

Arun Kumar (2017) says that in the wake of Liberalisation and Globalisation of Economic Policies, the Indian Business scenario is significantly changed in the last two decades. The scenario is tending to become more competitive in view of multinational entry and foreign capital inflow into this Country. Technology plays vital role in the Corporate World. It pressure on the Indian Companies to transform themselves or reengineer in order to achieve learner structures and reduced cost

III. RESEARCHERS & IMPORTANT FINDINGS

Researcher	Year	Remarks
Robert Solow	1980	He viewed computers everywhere except in the productivity statistics called productivity paradox
M Gartner	1990	ERP, as an extension of materials requirements planning, which later changed to manufacturing resource planning and computer integrated manufacturing
Bryn-jolfsson	1993	He goes on to recommend a change in the traditional measurements of productivity.
Hitt and Brynjolfsson	1996	One of the first studies that reveal a positive net return to IT investment by finding a gross marginal product of IT on productivity of approximately 95%.
Davenport	1998	ERP is a way of life. ERP system does not change anything, however the organization has to change the way of working
Poston and Grabski	2001	Examined the impact of ERP systems implementation on firm financial performance
Mabert et al., Hayes et al. and Hunton et al.,	2002	Based on the findings of Mabert et al. there is clear indication that under/on budget firms make a stronger effort for ERP implementation
Hossein	2004	ERP systems integrate internal and external management information across an entire organization, sales and service, customer relationship management, etc.
Berchet and Habchi	2005	used an ERP system to arrange the supply chain activities of the telecommunications company Alcatel
Charlambos Spathias	2005	Evidence suggests that businesses expect ERP systems to deliver improved company performance
Olson	2007	Compared alternative ERP options and procurement of ERP systems as package programs and made a list of the advantages and disadvantages of both methods
Stevenson	2007	(ERP) is the generic term used for management software that include modules such as production, finance, marketing and human resources
Fosser et al	2008	The connection between enterprise systems and competitive advantage was found out
Chou and Chang	2008	The effects of ERP applications on performance increase
Louden	2009	ERP is a packaged business software system that lets an organisation automate and integrate the majority of its business processes, share common data and practices across the enterprise
Michael Burns	2009	ERP enables companies to break down traditional organizations silos, replacing them with a tightly integrated horizontal structure
Janssen	2010	In incompatible environments, legacy systems may require high maintenance and a complex matrix of interrelating components to prolong application functionality

Ibrahim	2010	ERP is implemented in stages “It is thus argued that the stages of ERP implementation can be characterized as a journey with six stages
Turban	2013	Due to large capital commitments not every company has the financial or technical will or resources to replace all of their disparate legacy systems
Christaian Bach and Khalid Almgren	2014	He conveyed the idea that Companies are looking for an information system that can handle massive workloads. This is where Enterprise Resource Planning (ERP) systems come into play
Russell	2015	ERP business applications enable an organization to cohesively manage automated backbone functions across major departments including, but not limited to, HR, Sales, finance, marketing, and operations
Beal	2015	ERP business application is primarily designed for large organizations, it is designated as an enterprise system
Arun Kumar	2017	Due to Liberalisation and the Indian Business scenario is tends to become more competitive

Table 1:

IV. CONCLUSION

ERP Market growth in recent times, the ERP scenario in India is witnessing a rapid growth. A number of manufacturing firms, automotive, steel, oil, textile and pharmaceutical companies have already been implemented ERP solution thus making ERP dominating the overall picture in these organizations. It is an astonishing fact that in this present super computer era also many well reputed firms are ignoring ERP implementation. The old conventional methods for data transfer and communication in such a competitive world has started affecting efficiency of companies.

The companies in kerala who are not implemented ERP yet but who are planning to do so will be benefited through this paper. The critical success factors and their effects on the ERP implementation is to be found out. The details are planned to be collected from a well-structured questionnaire under various factors.

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